EBERLINE SERVICES

February 22, 2005

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352

Reference: **P.O. #630**
Eberline Services R4-12-175-7191, SDG H2905
R4-12-214-7197, SDG H2905
R4-12-280-7209, SDG H2905

Dear Mr. Trent:

Enclosed is data for eight solid samples all designated under SAF No. F04-015. Three samples were received on December 16, three received December 20, and two received December 23, 2004; all the samples were placed in sample delivery group H2905. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2905 was composed of eight solid (soil) samples designated under SAF No. F04-015 with a Project Designation of: 200-MW-1 Characterization Sampling and Analysis-Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The three samples received on December 16 and the three received December 20 were analyzed together in preparation batches with common QC samples. The two samples received December 23 were analyzed with their own QC samples.

2.0 ANALYSIS NOTES

2.2 Tritium Analyses

No problems were encountered during the course of the analyses.

2.6 Total Strontium Analyses

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.8 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Uranium Analyses

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

2.10 Total Uranium Analyses

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

2.14 Isotopic Plutonium Analyses

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

2.15 Americium-241 Analyses

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

2.16 Gamma Spectroscopy

Required for samples B19960 and B19961 only. No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Melissa C. Mannion
Senior Program Manager

2/22/5
Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2905

SDG	7191
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG H2905

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

SDG 7191
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SAMPLE SUMMARY

SDG 7191
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2905

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B19960	216-U-3; 17.5-20ft	SOLID		R412175-01	F04-015	F04-015-065	12/10/04 10:50
B19961	216-U-3; 17.5-20ft	SOLID		R412175-02	F04-015	F04-015-065	12/10/04 10:50
Method Blank		SOLID		R412175-04	F04-015		
Lab Control Sample		SOLID		R412175-03	F04-015		
Duplicate (R412175-01)	216-U-3; 17.5-20ft	SOLID		R412175-05	F04-015		12/10/04 10:50
Spike (R412175-02)	216-U-3; 17.5-20ft	SOLID		R412175-06	F04-015		12/10/04 10:50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SDG 7191
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2905

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
191	F04-015-065	B19960	SOLID	96.5	99.1 g		12/16/04	6	R412175-01	7191-001
		B19961	SOLID	93.1	100.6 g		12/16/04	6	R412175-02	7191-002
		Method Blank	SOLID						R412175-04	7191-004
		Lab Control Sample	SOLID						R412175-03	7191-003
		Duplicate (R412175-01)	SOLID	96.5	99.1 g		12/16/04	6	R412175-05	7191-005
		Spike (R412175-02)	SOLID	93.1	100.6 g		12/16/04	6	R412175-06	7191-006

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7191
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	SOLID	Technetium 99 in Solids	7121-061	10.0	2			1	1	1/1		
Gamma Spectroscopy												
I	SOLID	Iodine 129 in Solids	7121-061	10.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Solids	7121-061	10.0	2			1	1	1/1	1/1	X

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7191
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

LIENT SAMPLE ID / OCATION / USTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
19960			R412175-01	7191-001	H		02/03/05	02/09/05	MWT	Tritium in Solids
16-U-3; 17.5-20ft		SOLID	12/10/04	7191-001	I		02/09/05	02/16/05	MWT	Iodine 129 in Solids
04-015-065	F04-015		12/16/04	7191-001	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids
19961			R412175-02	7191-002	H		02/04/05	02/09/05	MWT	Tritium in Solids
16-U-3; 17.5-20ft		SOLID	12/10/04	7191-002	I		02/09/05	02/16/05	MWT	Iodine 129 in Solids
04-015-065	F04-015		12/16/04	7191-002	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids
ethod Blank			R412175-04	7191-004	H		02/04/05	02/09/05	MWT	Tritium in Solids
		SOLID		7191-004	I		02/09/05	02/11/05	MWT	Iodine 129 in Solids
	F04-015			7191-004	TC		02/01/05	02/03/05	MWT	Technetium 99 in Solids
ab Control Sample			R412175-03	7191-003	H		02/04/05	02/09/05	MWT	Tritium in Solids
		SOLID		7191-003	I		02/09/05	02/10/05	MWT	Iodine 129 in Solids
	F04-015			7191-003	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids
uplicate (R412175-01)			R412175-05	7191-005	H		02/04/05	02/09/05	MWT	Tritium in Solids
16-U-3; 17.5-20ft		SOLID	12/10/04	7191-005	I		02/09/05	02/11/05	MWT	Iodine 129 in Solids
	F04-015		12/16/04	7191-005	TC		02/02/05	02/03/05	MWT	Technetium 99 in Solids
pike (R412175-02)			R412175-06	7191-006	H		02/04/05	02/09/05	MWT	Tritium in Solids
16-U-3; 17.5-20ft		SOLID	12/10/04							
	F04-015		12/16/04							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
H	F04-015	Tritium in Solids	906.0_H3_LSC	2			1	1	1	1	6
I	F04-015	Iodine 129 in Solids	I129_SEP_LEPS_GS	2			1	1	1		5
TC	F04-015	Technetium 99 in Solids	TC99_TR_SEP_LSC	2			1	1	1		5
TOTALS				6			3	3	3	1	16

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-04 **Method Blank**

METHOD BLANK

SDG 7191	Client/Case no Hanford	SDG H2905	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R412175-04	Client sample id Method Blank		
Dept sample id 7191-004	Material/Matrix	SOLID	
	SAF No F04-015		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.090	0.14	0.23	400	U	H
Technetium 99	14133-76-7	0.052	0.21	0.76	15	U	TC
Iodine 129	15046-84-1	0.060	0.32	0.72	2.0	U	I

200-MW-1 Charatrizatn.Samp.&Ana-Soil

QC-BLANK 51222

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7191
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2905
Contract No. 630

Lab sample id R412175-03
Dept sample id 7191-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No F04-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	11.8	0.55	0.38	400		H	11.8	0.47	100	82-118	80-120
Technetium 99	111	3.0	0.85	15		TC	109	4.4	102	83-117	80-120
Iodine 129	125	2.8	5.0	2.0		I	116	4.6	108	82-118	80-120

200-MW-1 Charatrizatn.Samp.&Ana-Soil

QC-LCS 51221

LAB CONTROL SAMPLES
Page 1
SUMMARY DATA SECTION
Page 8

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-05 B19960

DUPLICATE

SDG	7191			Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R412175-05	Lab sample id	R412175-01	Client sample id	B19960
Dept sample id	7191-005	Dept sample id	7191-001	Location/Matrix	216-U-3; 17.5-20ft SOLID
		Received	12/16/04	Collected/Weight	12/10/04 10:50 99.1 g
% solids	96.5	% solids	96.5	Custody/SAF No	F04-015-065 F04-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	0.419	0.15	0.23	400		H	0.362	0.15	0.23		15	84
Technetium 99	-0.010	0.31	0.93	15	U	TC	0.080	0.28	0.47	U	-	
Iodine 129	-1.04	2.7	6.1	2.0	U	I	-0.336	0.85	1.9	U	-	

200-MW-1 Charatrizatn.Samp.&Ana-Soil

QC-DUP#1 51223

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-06 B19961

MATRIX SPIKE

SDG 7191 Client/Case no Hanford SDG H2905

Contact Melissa C. Mannion Contract No. 630

MATRIX SPIKE		ORIGINAL			
Lab sample id	R412175-06	Lab sample id	R412175-02	Client sample id	B19961
Dept sample id	7191-006	Dept sample id	7191-002	Location/Matrix	216-U-3; 17.5-20ft SOLID
		Received	12/16/04	Collected/Weight	12/10/04 10:50 100.6 g
% solids	93.1	% solids	93.1	Custody/SAF No	F04-015-065 F04-015

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	57.3	2.4	0.83	400	X	H	58.2	2.3	0.417	0.15	98	83-117	60-140

200-MW-1 Charatrizatn.Samp.&Ana-Soil

QC-MS#2 51224

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-01 **B19960**

DATA SHEET

SDG	7191	Client/Case no	Hanford	SDG H2905	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R412175-01	Client sample id	B19960		
Dept sample id	7191-001	Location/Matrix	216-U-3; 17.5-20ft	SOLID	
Received	12/16/04	Collected/Weight	12/10/04 10:50	99.1 g	
% solids	96.5	Custody/SAF No	F04-015-065	F04-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.362	0.15	0.23	400		H
Technetium 99	14133-76-7	0.080	0.28	0.47	15	U	TC
Iodine 129	15046-84-1	-0.336	0.85	1.9	2.0	U	I

200-MW-1 Charatrizatn.Samp.&Ana-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-02 **B19961**

DATA SHEET

SDG	7191	Client/Case no	Hanford		SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R412175-02	Client sample id	B19961		
Dept sample id	7191-002	Location/Matrix	216-U-3; 17.5-20ft		SOLID
Received	12/16/04	Collected/Weight	12/10/04 10:50	100.6 g	
% solids	93.1	Custody/SAF No	F04-015-065	F04-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.417	0.15	0.23	400		H
Technetium 99	14133-76-7	0.126	0.36	0.56	15	U	TC
Iodine 129	15046-84-1	0.527	0.54	1.2	2.0	U	I

200-MW-1 Charatrizatn.Samp.&Ana-Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test TC Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7121-061						
19960	R412175-01			7191-001	U	
19961	R412175-02			7191-002	U	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
Duplicate (R412175-01)	R412175-05			7191-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
00-MW-1 Charatrizatn.Samp.&Ana-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7121-061	2σ prep error 10.0 %	Reference Lab Notebook 7121 pg. 061														
19960	R412175-01			0.47	1.00			85		104			52	01/28/05	01/31	GRB-231
19961	R412175-02			0.56	1.00			63		104			52	01/28/05	01/31	GRB-232
LK (QC ID=51222)	R412175-04			0.76	1.00			66		50				01/28/05	02/01	GRB-203
CS (QC ID=51221)	R412175-03			0.85	1.00			65		50				01/28/05	01/31	GRB-225
Duplicate (R412175-01) (QC ID=51223)	R412175-05			0.93	1.00			54		50			54	01/28/05	02/02	GRB-224
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	
	TC99_TR_SEP_LSC	
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	0.71	±	0.39
YIELD	67	±	23

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test I__ Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

IODINE 129 IN SOLIDS

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
Preparation batch 7121-061						
19960	R412175-01			7191-001	U	
19961	R412175-02			7191-002	U	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
Duplicate (R412175-01)	R412175-05			7191-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	2.0	
00-MW-1 Charatrizatn.Samp.&Ana-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7121-061	2σ prep error 10.0 %	Reference Lab Notebook 7121 pg. 061														
19960	R412175-01			1.9	1.00			44		607			61	02/07/05	02/09	XSPEC-004
19961	R412175-02			1.2	1.00			49		607			61	02/07/05	02/09	XSPEC-002
LK (QC ID=51222)	R412175-04			0.72	1.00			87		926				02/07/05	02/09	XSPEC-004
CS (QC ID=51221)	R412175-03			5.0	1.00			52		608				02/07/05	02/09	XSPEC-016
Duplicate (R412175-01) (QC ID=51223)	R412175-05			6.1	1.00			26		927			61	02/07/05	02/09	XSPEC-016
Nominal values and limits from method				2.0	1.00			20-105		300			180			

PROCEDURES REFERENCE I129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 5
CP-530 Iodine-129 Purification, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.0 ± 4.8
YIELD 52 ± 44

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test H Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
reparation batch 7121-061						
19960	R412175-01			7191-001	0.362	
19961	R412175-02			7191-002	0.417	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
uplicate (R412175-01)	R412175-05			7191-005	ok	
pike (R412175-02)	R412175-06			7191-006	ok	X
ominal values and limits from method				RDLs (pCi/g)	400	
00-MW-1 Charatrizatn.Samp.&Ana-Soil						

METHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7121-061 2σ prep error 10.0 % Reference Lab Notebook 7121 pg. 061																
19960	R412175-01			0.23	20.2			33		120			55	02/03/05	02/03	LSC-004
19961	R412175-02			0.23	20.5			33		120			56	02/03/05	02/04	LSC-004
LK (QC ID=51222)	R412175-04			0.23	20.0			33		120				02/03/05	02/04	LSC-004
CS (QC ID=51221)	R412175-03			0.38	20.0			33		45				02/03/05	02/04	LSC-004
uplicate (R412175-01) (QC ID=51223)	R412175-05			0.23	20.0			34		120			56	02/03/05	02/04	LSC-004
pike (R412175-02) (QC ID=51224)	R412175-06			0.83	20.5			33		10			56	02/03/05	02/04	LSC-004
ominal values and limits from method				400	20.0					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-218 Tritium in Soil Samples by Azeotropic Distillation, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.36 ± 0.48
YIELD 33 ± 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2905

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

00000020

SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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Protocol Hanford
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Version 3.06
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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

SDG 7191
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2905

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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Version 3.06
Report date 02/21/05

SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
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GUIDE, cont.

Client Hanford
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Case no SDG_H2905

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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Form DVD-RG
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Report date 02/21/05

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Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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Case no SDG_H2905

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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GUIDE, cont.

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Case no SDG_H2905

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

00000030

SDG 7191
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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Contact Melissa C. Mannion

GUIDE, cont.

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Contract No. 630
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SDG 7191
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GUIDE, cont.

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F04-015-065	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Tyra/Wiberg	CS Cearlock	372-9638	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION 216-U-3; ~~12.5FT-15FT~~ 17.5-20ft LF 12/7/04	**PROJECT DESIGNATION** H2905 (7191) 200-MW-1 Characterization Sampling and Analysis - Soil		**SAF NO.** F04-015		
ICE CHEST NO. GRP-03-019	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express		
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** Su PTR 14590		**BILL OF LADING/AIR BILL NO.** Su PTR 14590		

MATRIX* A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
Radioactive Tie To: B19951

PRESERVATION	Cool 4C	None
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	120mL	60mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;

(First analysis column lined out: MT 8-12-04)

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B19960	SOIL	12/10/04	1050		X
B19961	SOIL	12/10/04	1050		X

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Dana Wiberg [illegible]	12/10/04 1330	Site Frige #6 MO-026	12/10/04 1330
MO-026 [illegible]	12/15/04 0925	M.H. Baldwin [illegible]	12/15/04 0925
M.H. Baldwin [illegible]	12/15/04 0925	[illegible]	
Fed Ex	12/16/04 9:40	[illegible]	12/16/04 [illegible]

SPECIAL INSTRUCTIONS MT 8-12-04
~~(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;~~

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Fluor Hanford City Richland State WA

Date/Time received 12/6/04 9:40 CoC No. F04-015-065

Container I.D. No. GRP 03-019 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [X]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [X]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [X]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [X]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [X]	
6.	Number of samples in shipping container: 2	Sample Matrix Soil		
7.	Number of containers per sample: 1	(Or see CoC _____)		
8.	Samples are in correct container	Yes [X]	No [ ]	
9.	Paperwork agrees with samples?	Yes [X]	No [ ]	

10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [.] pH _____ Preservative _____
13. Describe any anomalies: _____
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by _____ Date: 12/6/04 Time: 12:45

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. _____ Calibration date _____

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2905

SDG 7197
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2905

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

Prepared by

Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 02/21/05

SDG 7197
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

SDG 7197
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2905

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SAMPLE SUMMARY

SDG 7197
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2905

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B19963	216-U-3; 35ft-37.5ft	SOLID		R412214-01	F04-015	F04-015-067	12/14/04 07:00
B19964	216-U-3; 47ft-49.5ft	SOLID		R412214-02	F04-015	F04-015-068	12/15/04 07:00
B19965	216-U-3; 97.5ft-100ft	SOLID		R412214-03	F04-015	F04-015-069	12/16/04 09:00
Method Blank		SOLID		R412175-04	F04-015		
Lab Control Sample		SOLID		R412175-03	F04-015		
Duplicate (R412214-01)	216-U-3; 35ft-37.5ft	SOLID		R412214-06	F04-015		12/14/04 07:00

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SDG 7197
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2905

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

C BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS RECEIVED	SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
191		Method Blank	SOLID						R412175-04	7191-004
		Lab Control Sample	SOLID						R412175-03	7191-003
197	F04-015-067	B19963	SOLID	96.0	60.1 g		12/20/04	6	R412214-01	7197-001
	F04-015-068	B19964	SOLID	98.2	88.4 g		12/20/04	5	R412214-02	7197-002
	F04-015-069	B19965	SOLID	92.0	56.4 g		12/20/04	4	R412214-03	7197-003
		Duplicate (R412214-01)	SOLID	96.0	60.1 g		12/20/04	6	R412214-06	7197-006

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7197
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	SOLID	Technetium 99 in Solids	7121-061	10.0	3			1	1	1/1		
Gamma Spectroscopy												
I	SOLID	Iodine 129 in Solids	7121-061	10.0	3			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Solids	7121-061	10.0	3			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7197
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

LIENT SAMPLE ID / OCATION / USTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
19963			R412214-01	7197-001	H		02/04/05	02/11/05	MWT	Tritium in Solids
16-U-3; 35ft-37.5ft		SOLID	12/14/04	7197-001	I		02/08/05	02/09/05	MWT	Iodine 129 in Solids
04-015-067	F04-015		12/20/04	7197-001	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids
19964			R412214-02	7197-002	H		02/04/05	02/11/05	MWT	Tritium in Solids
16-U-3; 47ft-49.5ft		SOLID	12/15/04	7197-002	I		02/08/05	02/09/05	MWT	Iodine 129 in Solids
04-015-068	F04-015		12/20/04	7197-002	TC		02/01/05	02/03/05	MWT	Technetium 99 in Solids
19965			R412214-03	7197-003	H		02/04/05	02/11/05	MWT	Tritium in Solids
16-U-3; 97.5ft-100ft		SOLID	12/16/04	7197-003	I		02/09/05	02/11/05	MWT	Iodine 129 in Solids
04-015-069	F04-015		12/20/04	7197-003	TC		02/01/05	02/03/05	MWT	Technetium 99 in Solids
ethod Blank			R412175-04	7191-004	H		02/04/05	02/09/05	MWT	Tritium in Solids
		SOLID		7191-004	I		02/09/05	02/11/05	MWT	Iodine 129 in Solids
	F04-015			7191-004	TC		02/01/05	02/03/05	MWT	Technetium 99 in Solids
ab Control Sample			R412175-03	7191-003	H		02/04/05	02/09/05	MWT	Tritium in Solids
		SOLID		7191-003	I		02/09/05	02/10/05	MWT	Iodine 129 in Solids
	F04-015			7191-003	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids
uplicate (R412214-01)			R412214-06	7197-006	H		02/04/05	02/18/05	MWT	Tritium in Solids
16-U-3; 35ft-37.5ft		SOLID	12/14/04	7197-006	I		02/10/05	02/11/05	MWT	Iodine 129 in Solids
	F04-015		12/20/04	7197-006	TC		01/31/05	02/03/05	MWT	Technetium 99 in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	F04-015	Tritium in Solids	906.0_H3_LSC	3			1	1	1	6
I	F04-015	Iodine 129 in Solids	I129_SEP_LEPS_GS	3			1	1	1	6
TC	F04-015	Technetium 99 in Solids	TC99_TR_SEP_LSC	3			1	1	1	6
TOTALS				9			3	3	3	18

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-04 **Method Blank**

METHOD BLANK

SDG 7197	Client/Case no Hanford	SDG H2905	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R412175-04	Client sample id Method Blank		
Dept sample id 7191-004	Material/Matrix	SOLID	
	SAF No F04-015		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.090	0.14	0.23	400	U	H
Technetium 99	14133-76-7	0.052	0.21	0.76	15	U	TC
Iodine 129	15046-84-1	0.060	0.32	0.72	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

QC-BLANK 51222

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412175-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7197 Client/Case no Hanford SDG H2905

Contact Melissa C. Mannion Contract No. 630

Lab sample id R412175-03 Client sample id Lab Control Sample

Dept sample id 7191-003 Material/Matrix SOLID

SAF No F04-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	11.8	0.55	0.38	400		H	11.8	0.47	100	82-118	80-120
Technetium 99	111	3.0	0.85	15		TC	109	4.4	102	83-117	80-120
Iodine 129	125	2.8	5.0	2.0		I	116	4.6	108	82-118	80-120

200-MW-1 Charac.Samp.& Analysis-Soil

QC-LCS 51221

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412214-06 B19963

DUPLICATE

SDG 7197 Client/Case no Hanford SDG H2905

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R412214-06	Lab sample id	R412214-01	Client sample id	B19963
Dept sample id	7197-006	Dept sample id	7197-001	Location/Matrix	216-U-3; 35ft-37.5ft SOLID
		Received	12/20/04	Collected/Weight	12/14/04 07:00 60.1 g
% solids	96.0	% solids	96.0	Custody/SAF No	F04-015-067 F04-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	0.087	0.14	0.23	400	U	H	0.105	0.14	0.22	U	-	
Technetium 99	-0.078	0.39	1.1	15	U	TC	0.252	0.29	1.0	U	-	
Iodine 129	0.154	0.45	1.0	2.0	U	I	0.034	0.47	1.0	U	-	

200-MW-1 Charac.Samp.& Analysis-Soil

QC-DUP#1 51314

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412214-01 **B19963**

DATA SHEET

SDG	7197	Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R412214-01	Client sample id	B19963
Dept sample id	7197-001	Location/Matrix	216-U-3; 35ft-37.5ft SOLID
Received	12/20/04	Collected/Weight	12/14/04 07:00 60.1 g
% solids	96.0	Custody/SAF No	F04-015-067 F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.105	0.14	0.22	400	U	H
Technetium 99	14133-76-7	0.252	0.29	1.0	15	U	TC
Iodine 129	15046-84-1	0.034	0.47	1.0	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412214-02 **B19964**

DATA SHEET

SDG	7197	Client/Case no	Hanford	SDG H2905	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R412214-02	Client sample id	B19964		
Dept sample id	7197-002	Location/Matrix	216-U-3; 47ft-49.5ft	SOLID	
Received	12/20/04	Collected/Weight	12/15/04 07:00	88.4 g	
% solids	98.2	Custody/SAF No	F04-015-068	F04-015	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.175	0.14	0.22	400	U	H
Technetium 99	14133-76-7	-0.183	0.24	0.85	15	U	TC
Iodine 129	15046-84-1	0.533	1.4	3.3	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/21/05

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412214-03 **B19965**

DATA SHEET

SDG	7197	Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R412214-03	Client sample id	B19965
Dept sample id	7197-003	Location/Matrix	216-U-3; 97.5ft-100ft SOLID
Received	12/20/04	Collected/Weight	12/16/04 09:00 56.4 g
% solids	92.0	Custody/SAF No	F04-015-069 F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	1.78	0.18	0.23	400		H
Technetium 99	14133-76-7	-0.119	0.20	0.67	15	U	TC
Iodine 129	15046-84-1	-0.146	1.0	2.3	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test TC Matrix SOLID
SDG 7197
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Technetium 99	
reparation batch 7121-061						
19963	R412214-01			7197-001	U	
19964	R412214-02			7197-002	U	
19965	R412214-03			7197-003	U	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
uplicate (R412214-01)	R412214-06			7197-006	-	U
ominal values and limits from method				RDLs (pCi/g)	15	
00-MW-1 Charac.Samp.& Analysis-Soil						

METHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
reparation batch 7121-061	2σ prep error 10.0 %			Reference Lab Notebook 7121 pg. 061												
19963	R412214-01			1.0	1.00			50		50			48	01/28/05	01/31	GRB-228
19964	R412214-02			0.85	1.01			59		50			48	01/28/05	02/01	GRB-202
19965	R412214-03			0.67	1.00			75		50			47	01/28/05	02/01	GRB-203
LK (QC ID=51222)	R412175-04			0.76	1.00			66		50				01/28/05	02/01	GRB-203
CS (QC ID=51221)	R412175-03			0.85	1.00			65		50				01/28/05	01/31	GRB-225
uplicate (R412214-01) (QC ID=51314)	R412214-06			1.1	1.00			44		55			48	01/28/05	01/31	GRB-227
ominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES
REFERENCE — TC99_TR_SEP_LSC
CP-431 — Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
CP-008 — Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.87 ± 0.31
YIELD 60 ± 23

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test I Matrix SOLID
SDG 7197
Contact Melissa C. Mannion

METHOD SUMMARY

IODINE 129 IN SOLIDS

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
reparation batch 7121-061						
19963	R412214-01			7197-001	U	
19964	R412214-02			7197-002	U	
19965	R412214-03			7197-003	U	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
uplicate (R412214-01)	R412214-06			7197-006	-	U
ominal values and limits from method				RDLs (pCi/g)	2.0	
00-MW-1 Charac.Samp.& Analysis-Soil						

METHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7121-061	2σ prep error 10.0 % Reference Lab Notebook 7121 pg. 061															
19963	R412214-01			1.0	1.00			62		733			56	02/07/05	02/08	XSPEC-002
19964	R412214-02			3.3	1.00			48		733			55	02/07/05	02/08	XSPEC-016
19965	R412214-03			2.3	1.00			28		926			55	02/07/05	02/09	XSPEC-002
LK (QC ID=51222)	R412175-04			0.72	1.00			87		926				02/07/05	02/09	XSPEC-004
CS (QC ID=51221)	R412175-03			5.0	1.00			52		608				02/07/05	02/09	XSPEC-016
uplicate (R412214-01) (QC ID=51314)	R412214-06			1.0	1.00			64		604			58	02/07/05	02/10	XSPEC-004
ominal values and limits from method				2.0	1.00			20-105		300			180			

PROCEDURES REFERENCE I129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 5
CP-530 Iodine-129 Purification, rev 1

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 2.2 ± 3.4
YIELD 57 ± 39

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test H Matrix SOLID
SDG 7197
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
reparation batch 7121-061						
19963	R412214-01			7197-001	U	
19964	R412214-02			7197-002	U	
19965	R412214-03			7197-003	1.78	
LK (QC ID=51222)	R412175-04			7191-004	U	
CS (QC ID=51221)	R412175-03			7191-003	ok	
uplicate (R412214-01)	R412214-06			7197-006	-	U
ominal values and limits from method				RDLs (pCi/g)	400	
00-MW-1 Charac.Samp.& Analysis-Soil						

METHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7121-061	2σ prep error 10.0 %			Reference Lab Notebook 7121 pg. 061												
19963	R412214-01			0.22	20.2			34		120			52	02/03/05	02/04	LSC-004
19964	R412214-02			0.22	20.8			34		120			51	02/03/05	02/04	LSC-004
19965	R412214-03			0.23	20.8			33		120			50	02/03/05	02/04	LSC-004
LK (QC ID=51222)	R412175-04			0.23	20.0			33		120				02/03/05	02/04	LSC-004
CS (QC ID=51221)	R412175-03			0.38	20.0			33		45				02/03/05	02/04	LSC-004
uplicate (R412214-01) (QC ID=51314)	R412214-06			0.23	20.1			33		120			52	02/03/05	02/04	LSC-004
ominal values and limits from method				400	15.0					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-218 Tritium in Soil Samples by Azeotropic Distillation, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.25 ± 0.13
YIELD 33 ± 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SDG 7197
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2905

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2905

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

SDG 7197
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7197
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2905

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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SDG 7197
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2905

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

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Contract No. 630
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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GUIDE, cont.

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id EBRLNE
Protocol Hanford
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FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F04-015-067	PAGE 1 OF 1

COLLECTOR Pope/Pfister/Tyra/Wiberg	**COMPANY CONTACT** CS Cearlock	**TELEPHONE NO.** 372-9638	**PROJECT COORDINATOR** TRENT, SJ
SAMPLING LOCATION 216-U-3; 35FT-37.5FT	**PROJECT DESIGNATION** H2912 (7197) 200-MW-1 Characterization Sampling and Analysis - Soil		**SAF NO.** F04-015
ICE CHEST NO. GRP-03-009	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** PTR 14598		**BILL OF LADING/AIR BILL NO.** PTR 14598

PRICE CODE 8N

AIR QUALITY ☐

DATA TURNAROUND 45 Days / 45 Days

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
Radioactive Tie To: B19953

PRESERVATION	Cool 4C	None								
TYPE OF CONTAINER	aG	aG								
NO. OF CONTAINER(S)	1	1								
VOLUME	120mL	60mL								
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;								

(First analysis column lined out, annotated: TMJ 8/7/2 [?])

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19963	SOIL	12/14/04	0700	/	X								

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. PFISTER / [signature]	12-14-04 0900	MO-026 FRIG #1	12-14-04 0900
MO-026 Frig #1	12/14/04 1045	Greg Thomas / [signature]	12/14/04 1045
Greg Thomas / [signature]	12/14/04 1045	Fed Ex	
Fed Ex	12/20/04 10:30	[signature]	12/21/04 8:00

SPECIAL INSTRUCTIONS TMJ 8 12-14
(1) ~~NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;~~

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

FLUOR Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F04-015-068 | PAGE 1 OF 1

COLLECTOR Pope/Pfister/Tyra/Wiberg	**COMPANY CONTACT** CS Cearlock	**TELEPHONE NO.** 372-9638	**PROJECT COORDINATOR** TRENT, SJ
SAMPLING LOCATION 216-U-3; 47FT-49.5FT	**PROJECT DESIGNATION** H2912 (7197) 200-MW-1 Characterization Sampling and Analysis - Soil		**SAF NO.** F04-015
ICE CHEST NO. ERC-02-406	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** 50 PTR 14598		**BILL OF LADING/AIR BILL NO.** 50 PTR 14598

PRICE CODE 8N | **AIR QUALITY** ☐ | **DATA TURNAROUND** 45 Days / 45 Days

MATRIX*: A=Air; DL=Drum Liquids; DS=Drum Solids; L=Liquid; O=Oil; S=Soil; SE=Sediment; T=Tissue; V=Vegitation; W=Water; WI=Wipe; X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: Radioactive Tie To: B19954

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION	TYPE OF CONTAINER	NO. OF CONTAINER(S) / VOLUME	SAMPLE ANALYSIS							
B19964	SOIL	12-15-04	0700	Cool 4C	aG	1 / 120mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	None	aG	1 / 60mL	Iodine-129; Technetium-99; Tritium - H3;	X		

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J.S. Pope	12-15-04 1330	MO-096 Ref. #1	12-15-04 1330
M.H. Barthuer	12/16/04 1130	M.H. Barthuer	12/16/04 1130
M.H. Barthuer M.G. Barthuer	12/16/04 1130		
Fed Ex	12/20/04 10:00		12/20/04 9:00

SPECIAL INSTRUCTIONS

(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;

LABORATORY SECTION — RECEIVED BY / TITLE / DATE/TIME

FINAL SAMPLE DISPOSITION — DISPOSAL METHOD / DISPOSED BY / DATE/TIME

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F04-015-069	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Tyra/Wiberg	CS Cearlock	372-9638	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION 216-U-3; 97.5FT-100FT	**PROJECT DESIGNATION** H2912 (7197) 200-MW-1 Charactertization Sampling and Analysis - Soil		**SAF NO.** F04-015		
ICE CHEST NO. ERC-GHF-02-406 MAB 12/16/04	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express		
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SuPTC 14598		**BILL OF LADING/AIR BILL NO.** SuPTC 14598		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
Radioactive Tie To: ~~B19953~~ B19954 MAB 12/16/04

PRESERVATION	Cool 4C	None									
TYPE OF CONTAINER	aG	aG									
NO. OF CONTAINER(S)	1	1									
VOLUME	120mL	60mL									
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;									

TMB 12-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME								
B19965	SOIL	12.6.04	0910		X						

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. Pfister/Ruby Pfister	12/16/04 1030	MO-026 FRIG #1	12/16/04 1030
MO-026 FRIG #1	12/16/04 1105	M.G. Barker M.G. Barker	12/16/04 1105
M.G. Barker M.G. Barker	12/16/04 1105	Fed Ex	
Fed Ex	12/20/04 10:45		12/21/04 9:30

SPECIAL INSTRUCTIONS
~~(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;~~ TMB 12-04

☐ LABORATORY SECTION	RECEIVED BY		TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY	DATE/TIME

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Thor Hanford City Richland State WA

Date/Time received 12/20/04 10:00 CoC No. F04-015-067,074

Container I.D. No. GRR-03-009 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [Y]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [Y]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [Y]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [Y]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [X]	
6.	Number of samples in shipping container: 2	Sample Matrix Soil		
7.	Number of containers per sample: _____	(Or see CoC ✓)		
8.	Samples are in correct container	Yes [Y]	No [ ]	
9.	Paperwork agrees with samples?	Yes [Y]	No [ ]	
10.	Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [Y]			
11.	Samples are: In good condition [Y] Leaking [ ] Broken Container [ ] Missing [ ]			
12.	Samples are: Preserved [ ] Not preserved [ ] pH _____ Preservative _____			
13.	Describe any anomalies: _____			
14.	Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____			
15.	Inspected by _____ Date: 12/21/04 Time: 8:00			

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B19963	– (bond)		for	Chem.			
B19970	– (contamination)			for Shaw.			

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. _____ Calibration date _____

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Fluor Hanford City: Richland State: WA

Date/Time received: 12/20/04 10:00 CoC No. F04-015-068, 069, 075

Container I.D. No. ERC 02-406 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [✓]	
6.	Number of samples in shipping container: 3	Sample Matrix Soil		
7.	Number of containers per sample:	(Or see CoC ✓)		
8.	Samples are in correct container	Yes [✓]	No [ ]	
9.	Paperwork agrees with samples?	Yes [✓]	No [ ]	
10.	Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]			
11.	Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]			
12.	Samples are: Preserved [ ] Not preserved [ ] pH ___ Preservative ___			
13.	Describe any anomalies:			
14.	Was P.M. notified of any anomalies?	Yes [ ]	No [ ]	Date
15.	Inspected by [signature]	Date: 12/21/04	Time: 9:30	

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B19964	(60ml) for chem.						
B19965	(60ml) for chem.						
B19971	(can/spoon lunch) for Shaw						

Ion Chamber Ser. No. ___ Calibration date ___

Alpha Meter Ser. No. ___ Calibration date ___

Beta/Gamma Meter Ser. No. ___ Calibration date ___

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H2905

SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2905

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

Prepared by

Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SDG 7209
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2905

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2905

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SAMPLE SUMMARY

SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2905

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B19962	216-U-3; 22.5ft-25ft	SOLID		R412280-01	F04-015	F04-015-120	12/13/04 07:50
B19966	216-U-3; 1275ft-129.5ft	SOLID		R412280-02	F04-015	F04-015-070	12/20/04 07:40
B19PT5	216-U-3; 22.5ft-25ft	SOLID		R412280-03	F04-015	F04-015-118	12/13/04 07:50
Method Blank		SOLID		R412280-05	F04-015		
Lab Control Sample		SOLID		R412280-04	F04-015		
Duplicate (R412280-01)	216-U-3; 22.5ft-25ft	SOLID		R412280-06	F04-015		12/13/04 07:50
Duplicate (R412280-03)	216-U-3; 22.5ft-25ft	SOLID		R412280-07	F04-015		12/13/04 07:50
Spike (R412280-01)	216-U-3; 22.5ft-25ft	SOLID		R412280-08	F04-015		12/13/04 07:50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SDG 7209
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H2905

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
209	F04-015-070	B19966	SOLID	91.8	70.5 g		12/23/04	3	R412280-02	7209-002
	F04-015-118	B19PT5	SOLID	95.7	681.6 g		12/23/04	10	R412280-03	7209-003
	F04-015-120	B19962	SOLID	94.3	82.7 g		12/23/04	10	R412280-01	7209-001
		Method Blank	SOLID						R412280-05	7209-005
		Lab Control Sample	SOLID						R412280-04	7209-004
		Duplicate (R412280-01)	SOLID	94.3	82.7 g		12/23/04	10	R412280-06	7209-006
		Duplicate (R412280-03)	SOLID	95.7	681.6 g		12/23/04	10	R412280-07	7209-007
		Spike (R412280-01)	SOLID	94.3	82.7 g		12/23/04	10	R412280-08	7209-008

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7209
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2905

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	7113-102	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7113-102	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	7113-102	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	7113-102	10.0	1			1	1	1/1		
TC	SOLID	Technetium 99 in Solids	7113-102	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7113-102	15.0	1			1	1	1/1		
I	SOLID	Iodine 129 in Solids	7113-102	10.0	2			1	1	1/1		
Kinetic Phosphorimetry (KPA)												
U_T	SOLID	Uranium, Total in Solids	7113-102	9.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Solids	7113-102	10.0	2			1	1	1/1	1/1	X

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

WORK SUMMARY

SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2905

LIENT SAMPLE ID / OCATION / USTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
19962			R412280-01	7209-001	H		02/08/05	02/13/05	MWT	Tritium in Solids
16-U-3; 22.5ft-25ft		SOLID	12/13/04	7209-001	I		02/15/05	02/18/05	MWT	Iodine 129 in Solids
04-015-120	F04-015		12/23/04	7209-001	TC		02/17/05	02/18/05	MWT	Technetium 99 in Solids
19966			R412280-02	7209-002	H		02/08/05	02/13/05	MWT	Tritium in Solids
16-U-3; 1275ft-129.5ft		SOLID	12/20/04	7209-002	I		02/15/05	02/18/05	MWT	Iodine 129 in Solids
04-015-070	F04-015		12/23/04	7209-002	TC		02/14/05	02/16/05	MWT	Technetium 99 in Solids
19PT5			R412280-03	7209-003	AM		01/29/05	01/31/05	MWT	Americium 241 in Solids
16-U-3; 22.5ft-25ft		SOLID	12/13/04	7209-003	GAM		02/10/05	02/14/05	CSS	Gamma Scan
04-015-118	F04-015		12/23/04	7209-003	PU		02/02/05	02/03/05	MWT	Plutonium, Isotopic in Solids
				7209-003	SR		01/14/05	01/19/05	MWT	Total Strontium in Solids
				7209-003	U		01/15/05	01/17/05	MWT	Uranium, Isotopic in Solids
				7209-003	U_T		02/11/05	02/14/05	MWT	Uranium, Total in Solids
ethod Blank			R412280-05	7209-005	AM		01/31/05	02/01/05	MWT	Americium 241 in Solids
		SOLID		7209-005	GAM		01/12/05	02/14/05	CSS	Gamma Scan
	F04-015			7209-005	H		02/08/05	02/13/05	MWT	Tritium in Solids
				7209-005	I		02/17/05	02/18/05	MWT	Iodine 129 in Solids
				7209-005	PU		02/02/05	02/05/05	MWT	Plutonium, Isotopic in Solids
				7209-005	SR		01/14/05	01/19/05	MWT	Total Strontium in Solids
				7209-005	TC		02/14/05	02/18/05	MWT	Technetium 99 in Solids
				7209-005	U		01/15/05	01/17/05	MWT	Uranium, Isotopic in Solids
				7209-005	U_T		02/11/05	02/14/05	MWT	Uranium, Total in Solids
ab Control Sample			R412280-04	7209-004	AM		01/29/05	01/31/05	MWT	Americium 241 in Solids
		SOLID		7209-004	GAM		02/11/05	02/14/05	CSS	Gamma Scan
	F04-015			7209-004	H		02/08/05	02/13/05	MWT	Tritium in Solids
				7209-004	I		02/18/05	02/18/05	MWT	Iodine 129 in Solids
				7209-004	PU		02/02/05	02/04/05	MWT	Plutonium, Isotopic in Solids
				7209-004	SR		01/14/05	01/19/05	MWT	Total Strontium in Solids
				7209-004	TC		02/17/05	02/18/05	MWT	Technetium 99 in Solids
				7209-004	U		01/15/05	01/17/05	MWT	Uranium, Isotopic in Solids
				7209-004	U_T		02/11/05	02/14/05	MWT	Uranium, Total in Solids
uplicate (R412280-01)			R412280-06	7209-006	H		02/08/05	02/13/05	MWT	Tritium in Solids
16-U-3; 22.5ft-25ft		SOLID	12/13/04	7209-006	I		02/17/05	02/18/05	MWT	Iodine 129 in Solids
	F04-015		12/23/04	7209-006	TC		02/15/05	02/18/05	MWT	Technetium 99 in Solids

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/21/05

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SDG 7209
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

LIENT SAMPLE ID / OCATION / USTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
uplicate (R412280-03)			R412280-07	7209-007	AM		01/31/05	02/01/05	MWT	Americium 241 in Solids
16-U-3; 22.5ft-25ft		SOLID	12/13/04	7209-007	GAM		02/12/05	02/14/05	CSS	Gamma Scan
	F04-015		12/23/04	7209-007	PU		02/02/05	02/04/05	MWT	Plutonium, Isotopic in Solids
				7209-007	SR		01/14/05	01/19/05	MWT	Total Strontium in Solids
				7209-007	U		01/15/05	01/17/05	MWT	Uranium, Isotopic in Solids
				7209-007	U_T		02/11/05	02/14/05	MWT	Uranium, Total in Solids
pike (R412280-01)			R412280-08	7209-008	H		02/08/05	02/13/05	MWT	Tritium in Solids
16-U-3; 22.5ft-25ft		SOLID	12/13/04							
	F04-015		12/23/04							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	F04-015	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
GAM	F04-015	Gamma Scan	GAMMA_GS	1			1	1	1		4
H	F04-015	Tritium in Solids	906.0_H3_LSC	2			1	1	1	1	6
I	F04-015	Iodine 129 in Solids	I129_SEP_LEPS_GS	2			1	1	1		5
PU	F04-015	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1		4
SR	F04-015	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
TC	F04-015	Technetium 99 in Solids	TC99_TR_SEP_LSC	2			1	1	1		5
U	F04-015	Uranium, Isotopic in Solids	UISO_PLATE_AEA	1			1	1	1		4
U_T	F04-015	Uranium, Total in Solids	UTOT_KPA	1			1	1	1		4
TOTALS				12			9	9	9	1	40

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-05 **Method Blank**

METHOD BLANK

SDG 7209 Client/Case no Hanford SDG H2905
Contact Melissa C. Mannion Contract No. 630

Lab sample id R412280-05 Client sample id Method Blank
Dept sample id 7209-005 Material/Matrix SOLID
SAF No F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.096	0.20	0.33	400	U	H
Total Strontium	SR-RAD	0.018	0.12	0.25	1.0	U	SR
Technetium 99	14133-76-7	0.205	0.28	0.50	15	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.004	0.008	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.052	0.20	1.0	U	U
Uranium 235	15117-96-1	0.031	0.063	0.24	1.0	U	U
Uranium 238	U-238	0.078	0.10	0.20	1.0	U	U
Plutonium 238	13981-16-3	0.015	0.030	0.12	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.030	0.12	1.0	U	PU
Americium 241	14596-10-2	0.070	0.14	0.18	1.0	U	AM
Iodine 129	15046-84-1	-0.130	0.29	0.66	2.0	U	I
Potassium 40	13966-00-2	U		0.23		U	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.023	0.10	U	GAM
Radium 226	13982-63-3	U		0.041	0.10	U	GAM
Radium 228	15262-20-1	U		0.086	0.20	U	GAM
Europium 152	14683-23-9	U		0.057	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Thorium 228	14274-82-9	U		0.026		U	GAM
Thorium 232	TH-232	U		0.086		U	GAM
Uranium 235	15117-96-1	U		0.059		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM

200-MW-1 Charac. Sampling& Ana.-Soil

QC-BLANK 51384

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7209 | Client/Case no Hanford | SDG H2905

Contact Melissa C. Mannion | Contract No. 630

Lab sample id R412280-04 | Client sample id Lab Control Sample

Dept sample id 7209-004 | Material/Matrix | SOLID

SAF No F04-015

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	17.0	0.54	0.34	400		H	17.3	0.69	98	83-117	80-120
Total Strontium	11.4	0.62	0.25	1.0		SR	11.1	0.44	103	81-119	80-120
Technetium 99	114	2.2	0.53	15		TC	120	4.8	95	84-116	80-120
Total Uranium (ug/g)	36.2	4.4	0.084	1.0		U_T	36.2	1.4	100	77-123	80-120
Uranium 233/234	19.1	1.6	0.72	1.0		U	19.3	0.77	99	84-116	80-120
Uranium 235	14.8	1.4	0.15	1.0		U	15.7	0.63	94	84-116	80-120
Uranium 238	20.5	1.7	0.69	1.0		U	21.0	0.84	98	85-115	80-120
Plutonium 238	24.5	1.8	0.11	1.0		PU	26.4	1.1	93	86-114	80-120
Plutonium 239/240	28.4	2.0	0.11	1.0		PU	29.0	1.2	98	86-114	80-120
Americium 241	23.7	3.1	0.39	1.0		AM	22.4	0.90	106	77-123	80-120
Iodine 129	124	2.4	3.5	2.0		I	127	5.1	98	84-116	80-120
Cobalt 60	1.22	0.049	0.024	0.050		GAM	1.17	0.047	104	75-125	80-120
Cesium 137	1.23	0.043	0.031	0.10		GAM	1.18	0.047	104	75-125	80-120

200-MW-1 Charac. Sampling& Ana.-Soil

QC-LCS 51383

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-06 B19962

DUPLICATE

SDG 7209		Client/Case no Hanford	SDG H2905
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R412280-06	Lab sample id R412280-01	Client sample id B19962	
Dept sample id 7209-006	Dept sample id 7209-001	Location/Matrix 216-U-3; 22.5ft-25ft	SOLID
	Received 12/23/04	Collected/Weight 12/13/04 07:50	82.7 g
% solids 94.3	% solids 94.3	Custody/SAF No F04-015-120	F04-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	0.830	0.22	0.33	400		H	0.955	0.23	0.33		14	58
Technetium 99	0.028	0.18	0.56	15	U	TC	0.115	0.17	0.52	U	-	
Iodine 129	0.150	0.42	0.94	2.0	U	I	-0.258	0.62	1.4	U	-	

200-MW-1 Charac. Sampling& Ana.-Soil

QC-DUP#1 51385

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-07 B19PT5

DUPLICATE

SDG 7209 Client/Case no Hanford SDG H2905

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R412280-07	Lab sample id	R412280-03	Client sample id	B19PT5
Dept sample id	7209-007	Dept sample id	7209-003	Location/Matrix	216-U-3; 22.5ft-25ft SOLID
		Received	12/23/04	Collected/Weight	12/13/04 07:50 681.6 g
% solids	95.7	% solids	95.7	Custody/SAF No	F04-015-118 F04-015

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Total Strontium	-0.053	0.11	0.24	1.0	U	SR	0.017	0.12	0.24	U	-	
Total Uranium (ug/g)	1.41	0.17	0.008	1.0		U_T	1.47	0.17	0.008		4	31
Uranium 233/234	0.632	0.23	0.15	1.0		U	0.592	0.21	0.16		7	77
Uranium 235	0.093	0.093	0.18	1.0	U	U	0.025	0.049	0.19	U	-	
Uranium 238	0.536	0.19	0.15	1.0		U	0.551	0.21	0.16		3	79
Plutonium 238	-0.018	0.036	0.14	1.0	U	PU	0	0.070	0.27	U	-	
Plutonium 239/240	0.036	0.036	0.14	1.0	U	PU	0.035	0.070	0.27	U	-	
Americium 241	0.047	0.070	0.090	1.0	U	AM	0	0.054	0.21	U	-	
Potassium 40	10.6	0.46	0.24			GAM	10.4	0.54	0.25		2	33
Cobalt 60	U		0.022	0.050	U	GAM	U		0.027	U	-	
Cesium 137	U		0.021	0.10	U	GAM	U		0.026	U	-	
Radium 226	0.435	0.038	0.038	0.10		GAM	0.430	0.054	0.053		1	39
Radium 228	0.650	0.096	0.093	0.20		GAM	0.634	0.10	0.098		2	45
Europium 152	U		0.055	0.10	U	GAM	U		0.068	U	-	
Europium 154	U		0.070	0.10	U	GAM	U		0.083	U	-	
Europium 155	U		0.061	0.10	U	GAM	U		0.075	U	-	
Thorium 228	0.541	0.027	0.025			GAM	0.553	0.032	0.030		2	34
Thorium 232	0.650	0.096	0.093			GAM	0.634	0.10	0.098		2	45
Uranium 235	U		0.084		U	GAM	U		0.10	U	-	
Uranium 238	U		2.6		U	GAM	U		3.3	U	-	
Americium 241	U		0.099		U	GAM	U		0.12	U	-	

200-MW-1 Charac. Sampling& Ana.-Soil

QC-DUP#3 51386

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/21/05

00000084

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-08

B19962

MATRIX SPIKE

SDG 7209			Client/Case no Hanford SDG H2905
Contact Melissa C. Mannion			Contract No. 630
MATRIX SPIKE		ORIGINAL	
Lab sample id R412280-08	Lab sample id R412280-01		Client sample id B19962
Dept sample id 7209-008	Dept sample id 7209-001		Location/Matrix 216-U-3; 22.5ft-25ft SOLID
	Received 12/23/04		Collected/Weight 12/13/04 07:50 82.7 g
% solids 94.3	% solids 94.3		Custody/SAF No F04-015-120 F04-015

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	86.0	1.2	0.34	400	X	H	88.7	3.5	0.955	0.23	96	84-116	60-140

200-MW-1 Charac. Sampling& Ana.-Soil

QC-MS#1 51387

MATRIX SPIKES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-01 **B19962**

DATA SHEET

SDG	7209	Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R412280-01	Client sample id	B19962
Dept sample id	7209-001	Location/Matrix	216-U-3; 22.5ft-25ft SOLID
Received	12/23/04	Collected/Weight	12/13/04 07:50 82.7 g
% solids	94.3	Custody/SAF No	F04-015-120 F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.955	0.23	0.33	400		H
Technetium 99	14133-76-7	0.115	0.17	0.52	15	U	TC
Iodine 129	15046-84-1	-0.258	0.62	1.4	2.0	U	I

200-MW-1 Charac. Sampling& Ana.-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-02 **B19966**

DATA SHEET

SDG	7209	Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R412280-02	Client sample id	B19966
Dept sample id	7209-002	Location/Matrix	216-U-3; 1275ft-129.5ft SOLID
Received	12/23/04	Collected/Weight	12/20/04 07:40 70.5 g
% solids	91.8	Custody/SAF No	F04-015-070 F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.142	0.16	0.26	400	U	H
Technetium 99	14133-76-7	0.090	0.23	0.55	15	U	TC
Iodine 129	15046-84-1	-0.099	0.48	1.1	2.0	U	I

200-MW-1 Charac. Sampling& Ana.-Soil

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2905

R412280-03 **B19PT5**

DATA SHEET

SDG	7209	Client/Case no	Hanford SDG H2905
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R412280-03	Client sample id	B19PT5
Dept sample id	7209-003	Location/Matrix	216-U-3; 22.5ft-25ft SOLID
Received	12/23/04	Collected/Weight	12/13/04 07:50 681.6 g
% solids	95.7	Custody/SAF No	F04-015-118 F04-015

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.017	0.12	0.24	1.0	U	SR
Total Uranium (ug/g)	7440-61-1	1.47	0.17	0.008	1.0		U_T
Uranium 233/234	U-233/234	0.592	0.21	0.16	1.0		U
Uranium 235	15117-96-1	0.025	0.049	0.19	1.0	U	U
Uranium 238	U-238	0.551	0.21	0.16	1.0		U
Plutonium 238	13981-16-3	0	0.070	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0.035	0.070	0.27	1.0	U	PU
Americium 241	14596-10-2	0	0.054	0.21	1.0	U	AM
Potassium 40	13966-00-2	10.4	0.54	0.25			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.430	0.054	0.053	0.10		GAM
Radium 228	15262-20-1	0.634	0.10	0.098	0.20		GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.083	0.10	U	GAM
Europium 155	14391-16-3	U		0.075	0.10	U	GAM
Thorium 228	14274-82-9	0.553	0.032	0.030			GAM
Thorium 232	TH-232	0.634	0.10	0.098			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

200-MW-1 Charac. Sampling& Ana.-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test AM Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

:ESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
reparation batch 7113-102						
19PT5	R412280-03			7209-003	U	
LK (QC ID=51384)	R412280-05			7209-005	U	
CS (QC ID=51383)	R412280-04			7209-004	ok	
uplicate (R412280-03)	R412280-07			7209-007	-	U
ominal values and limits from method				RDLs (pCi/g)	1.0	
00-MW-1 Charac. Sampling& Ana.-Soil						

IETHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102	2σ prep error 5.0 %				Reference Lab Notebook 7113 pg. 102											
19PT5	R412280-03			0.21	0.500			74		133			47	01/29/05	01/29	SS-036
LK (QC ID=51384)	R412280-05			0.18	0.500			42		268				01/29/05	01/31	SS-061
CS (QC ID=51383)	R412280-04			0.39	0.500			40		133				01/29/05	01/29	SS-042
uplicate (R412280-03) (QC ID=51386)	R412280-07			0.090	0.500			84		269			49	01/29/05	01/31	SS-062
ominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.22 ± 0.25
YIELD 60 ± 45

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test PU Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

ESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
reparation batch 7113-102								
19PT5	R412280-03			7209-003	U		U	
LK (QC ID=51384)	R412280-05			7209-005	U		U	
CS (QC ID=51383)	R412280-04			7209-004	ok		ok	
uplicate (R412280-03)	R412280-07			7209-007	-	U	-	U
ominal values and limits from method 00-MW-1 Charac. Sampling& Ana.-Soil				RDLs (pCi/g)	1.0		1.0	

IETHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102 2σ prep error 5.0 % Reference Lab Notebook 7113 pg. 102																
19PT5	R412280-03			0.27	0.500			76		102			51	01/31/05	02/02	SS-058
LK (QC ID=51384)	R412280-05			0.12	0.500			74		226				01/31/05	02/02	SS-060
CS (QC ID=51383)	R412280-04			0.11	0.500			82		226				01/31/05	02/02	SS-059
uplicate (R412280-03) (QC ID=51386)	R412280-07			0.14	0.500			64		226			51	01/31/05	02/02	SS-061
ominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.16 ± 0.15
YIELD 74 ± 15

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000090

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test U Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

:ESULTS

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
reparation batch 7113-102											
19PT5	R412280-03			7209-003	0.592	U	0.551	107	56	5	9
LK (QC ID=51384)	R412280-05			7209-005	U	U	U				
CS (QC ID=51383)	R412280-04			7209-004	ok	ok	ok				
uplicate (R412280-03)	R412280-07			7209-007	ok	- U	ok	118	60	17	18
ominal values and limits from method		RDLs (pCi/g)			1.0	1.0	1.0	100		4	
00-MW-1 Charac. Sampling& Ana.-Soil							Averages	113		11	

IETHOD PERFORMANCE

LIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102 2σ prep error 5.0 % Reference Lab Notebook 7113 pg. 102																
19PT5	R412280-03			0.19	0.500			58		223			33	01/14/05	01/15	SS-055
LK (QC ID=51384)	R412280-05			0.24	0.500			47		223				01/14/05	01/15	SS-057
CS (QC ID=51383)	R412280-04			0.72	0.500			74		223				01/14/05	01/15	SS-056
uplicate (R412280-03) (QC ID=51386)	R412280-07			0.18	0.500			64		223			33	01/14/05	01/15	SS-058
ominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.33 ± 0.52
YIELD 61 ± 23

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Test SR Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7113-102						
19PTS	R412280-03			7209-003	U	
LK (QC ID=51384)	R412280-05			7209-005	U	
CS (QC ID=51383)	R412280-04			7209-004	ok	
Duplicate (R412280-03)	R412280-07			7209-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
00-MW-1 Charac. Sampling& Ana.-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7113-102	2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 102															
19PTS	R412280-03			0.24	1.00			89	100				32	01/14/05	01/14	GRB-232
LK (QC ID=51384)	R412280-05			0.25	1.00			81	100					01/14/05	01/14	GRB-203
CS (QC ID=51383)	R412280-04			0.25	1.00			81	92					01/14/05	01/14	GRB-220
Duplicate (R412280-03) (QC ID=51386)	R412280-07			0.24	1.00			90	100				32	01/14/05	01/14	GRB-204
Nominal values and limits from method				1.0	1.00			30-105	100				180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 7
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-380	Strontium in Water Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.24 ± 0.012
YIELD 85 ± 10

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

METHOD SUMMARY

TECHNETIUM 99 IN SOLIDS

BETA COUNTING

Test TC Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2905

ESULTS

IENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
eparation batch 7113-102						
.9962	R412280-01			7209-001	U	
.9966	R412280-02			7209-002	U	
K (QC ID=51384)	R412280-05			7209-005	U	
S (QC ID=51383)	R412280-04			7209-004	ok	
plicate (R412280-01)	R412280-06			7209-006	-	U

minal values and limits from method RDLs (pCi/g) 15
0-MW-1 Charac. Sampling& Ana.-Soil

ETHOD PERFORMANCE

IENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 7113-102	2σ prep error 10.0 %	Reference Lab Notebook 7113 pg. 102														
.9962	R412280-01			0.52	1.00			100		50			66	02/11/05	02/17	GRB-230
.9966	R412280-02			0.55	1.00			98		50			56	02/11/05	02/14	GRB-204
K (QC ID=51384)	R412280-05			0.50	1.00			100		50				02/11/05	02/14	GRB-222
S (QC ID=51383)	R412280-04			0.53	1.00			97		50				02/11/05	02/17	GRB-218
plicate (R412280-01) (QC ID=51385)	R412280-06			0.56	1.00			94		50			64	02/11/05	02/15	GRB-227
minal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	
	TC99_TR_SEP_LSC	
	CP-431	Technetium-99 Purification of Soil or Resin by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.53 ± 0.048
YIELD 98 ± 5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000093

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test GAM Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7113-102								
19PT5	R412280-03			7209-003	U		U	
LK (QC ID=51384)	R412280-05			7209-005	U		U	
CS (QC ID=51383)	R412280-04			7209-004	ok		ok	
Duplicate (R412280-03)	R412280-07			7209-007	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
00-MW-1 Charac. Sampling& Ana.-Soil								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7113-102	2σ prep error 15.0 % Reference Lab Notebook 7113 pg. 102															
19PT5	R412280-03			0.24	228					735			59	01/05/05	02/10	JR,05,00
LK (QC ID=51384)	R412280-05			0.19	228					966				01/05/05	01/12	JR,07,00
CS (QC ID=51383)	R412280-04			0.024	228					848				01/05/05	02/11	JR,05,00
Duplicate (R412280-03) (QC ID=51386)	R412280-07			0.19	228					1131			61	01/05/05	02/12	JR,05,00
Nominal values and limits from method				0.050	228					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 7
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.16 ± 0.19
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000094

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

METHOD SUMMARY

IODINE 129 IN SOLIDS

GAMMA SPECTROSCOPY

Test I Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
reparation batch 7113-102						
19962	R412280-01			7209-001	U	
19966	R412280-02			7209-002	U	
LK (QC ID=51384)	R412280-05			7209-005	U	
CS (QC ID=51383)	R412280-04			7209-004	ok	
uplicate (R412280-01)	R412280-06			7209-006	-	U
ominal values and limits from method				RDLs (pCi/g)	2.0	
00-MW-1 Charac. Sampling& Ana.-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102 2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 102																
19962	R412280-01			1.4	1.00			57		790			64	02/12/05	02/15	XSPEC-004
19966	R412280-02			1.1	1.01			64		791			57	02/12/05	02/15	XSPEC-002
LK (QC ID=51384)	R412280-05			0.66	1.00			96		1110				02/12/05	02/17	XSPEC-002
CS (QC ID=51383)	R412280-04			3.5	1.00			99		302				02/12/05	02/18	XSPEC-002
uplicate (R412280-01) (QC ID=51385)	R412280-06			0.94	1.00			57		1111			66	02/12/05	02/17	XSPEC-004
ominal values and limits from method				2.0	1.00			20-105		300			180			

PROCEDURES REFERENCE I129_SEP_LEPS_GS
CP-024 Iodine-129, Sample Dissolution, rev 5
CP-530 Iodine-129 Purification, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.5 ± 2.3
YIELD 75 ± 42

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000095

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test U_T Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOLIDS
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2905

ESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
reparation batch 7113-102					
19PT5	R412280-03			7209-003	1.47
LK (QC ID=51384)	R412280-05			7209-005	U
CS (QC ID=51383)	R412280-04			7209-004	ok
uplicate (R412280-03)	R412280-07			7209-007	ok
ominal values and limits from method				RDLs (ug/g)	1.0
00-MW-1 Charac. Sampling& Ana.-Soil					

ETHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102 2σ prep error 9.0 % Reference Lab Notebook 7113 pg. 102																
19PT5	R412280-03			0.008	0.0500								60	02/11/05	02/11	KPA-001
LK (QC ID=51384)	R412280-05			0.008	0.0500									02/11/05	02/11	KPA-001
CS (QC ID=51383)	R412280-04			0.084	0.0500									02/11/05	02/11	KPA-001
uplicate (R412280-03) (QC ID=51386)	R412280-07			0.008	0.0500								60	02/11/05	02/11	KPA-001
ominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-062	Sample Aliquoting, rev 2
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 8
	CP-929	Calibration of the Kinetic Phosphorimeter, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.027 ± 0.076
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000096

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

Test H Matrix SOLID
SDG 7209
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOLIDS
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2905

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
reparation batch 7113-102						
19962	R412280-01			7209-001	0.955	
19966	R412280-02			7209-002	U	
LK (QC ID=51384)	R412280-05			7209-005	U	
CS (QC ID=51383)	R412280-04			7209-004	ok	
uplicate (R412280-01)	R412280-06			7209-006	ok	
pike (R412280-01)	R412280-08			7209-008	ok	X
ominal values and limits from method					RDLs (pCi/g)	400
00-MW-1 Charac. Sampling& Ana.-Soil						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 7113-102	2σ prep error 10.0 % Reference Lab Notebook 7113 pg. 102															
19962	R412280-01			0.33	15.1			34		120			57	02/08/05	02/08	LSC-005
19966	R412280-02			0.26	20.4			33		120			50	02/08/05	02/08	LSC-005
LK (QC ID=51384)	R412280-05			0.33	15.0			33		120				02/08/05	02/08	LSC-005
CS (QC ID=51383)	R412280-04			0.34	15.0			33		120				02/08/05	02/08	LSC-005
uplicate (R412280-01) (QC ID=51385)	R412280-06			0.33	15.1			34		120			57	02/08/05	02/08	LSC-005
pike (R412280-01) (QC ID=51387)	R412280-08			0.34	15.1			33		120			57	02/08/05	02/08	LSC-005
ominal values and limits from method				400	15.0					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-218 Tritium in Soil Samples by Azeotropic Distillation, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.32 ± 0.061
YIELD 33 ± 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/21/05

00000097

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

00000099

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2905

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

00000100

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id EBRLNE
Protocol Hanford
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SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case..

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2905

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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Version 3.06
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SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

00000204

pcl 2-24-

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

000108

SDG 7209
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2905

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id EBRLNE
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

000111

SDG 7209
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2905

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 02/21/05

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F04-015-120	PAGE 1 OF 1

COLLECTOR Pope/Pfister/Tyra/Wiberg	**COMPANY CONTACT** CS Cearlock **TELEPHONE NO.** 372-9638	**PROJECT COORDINATOR** TRENT, SJ	**PRICE CODE** 8N **AIR QUALITY** ☐ **DATA TURNAROUND** 45 Days / 45 Days
SAMPLING LOCATION 216-U-3; 22.5ft-25ft	**PROJECT DESIGNATION** H2923 (7209) 200-MW-1 Characterization Sampling and Analysis - Soil	**SAF NO.** F04-015	
ICE CHEST NO. GRP-03-003	**FIELD LOGBOOK NO.** HNF-N-386 1 **COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express	
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** See PTR 14601	**BILL OF LADING/AIR BILL NO.** See PTR 14601	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
Radioactive Tie To: ~~B19952~~ MAP 12/21/04 B19975

PRESERVATION	None
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	Iodine-129; Technetium-99; Tritium - H3;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
~~B19962~~	SOIL	12-13-04	0750	X									

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. PFISTER / [signature]	12-13-04 1415	MO-026 FRIG #1	12-13-04 1415
MO-026 [signature]	12/21/04 0830	M.H. Barker / M.H. Barker	12/21/04 0830
M.H. Barker / M.H. Barker	12/21/04 0830	Fed Ex	
[signature]	12/23/04 12:00	[signature]	12/23/04 12:00

SPECIAL INSTRUCTIONS

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

FLUOR Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F04-015-070 | PAGE 1 OF 1

COLLECTOR Pope/Pfister/Tyra/Wiberg	**COMPANY CONTACT** CS Cearlock	**TELEPHONE NO.** 372-9638	**PROJECT COORDINATOR** TRENT, SJ
PRICE CODE 8N	**DATA TURNAROUND** 45 Days / 45 Days		
SAMPLING LOCATION 216-U-3; 127FT-129.5FT	**PROJECT DESIGNATION** H2923 (7209) 200-MW-1 Characterization Sampling and Analysis - Soil	**SAF NO.** F04-015	**AIR QUALITY** ☐
ICE CHEST NO. GRP-03-003	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** SUPTR 14601		**BILL OF LADING/AIR BILL NO.** SUPTR 14601

MATRIX*: A=Air; DL=Drum Liquids; DS=Drum Solids; L=Liquid; O=Oil; S=Soil; SE=Sediment; T=Tissue; V=Vegitation; W=Water; WI=Wipe; X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: Radioactive Tie To: ~~B19956~~ B19955 MJT 12/2/04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION	TYPE OF CONTAINER	NO. OF CONTAINER(S) / VOLUME	SAMPLE ANALYSIS
				Cool 4C	aG	1 / 120mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
				None	aG	1 / 60mL	Iodine-129; Technetium-99; Tritium - H3;
B19966	SOIL	12/20/04	0740		X		

MJT 12-04

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
[illegible]	12/20/04 0910	MO-020 Freight #1	12/20/04 0910
MO-020	12/21/04 0800	M.H. Barnhart M.G. Barnhart	12/21/04 0800
M.H. Barnhart M.G. Barnhart	12/21/04	[illegible]	
[illegible]	12/23/04 12:30	[illegible]	12/23/04 12:30

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

(1) ~~NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;~~ MJT 12-04

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

FLUOR Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F04-015-118 | PAGE 1 OF 1

COLLECTOR Pope/Pfister/Hughes/Wiberg	**COMPANY CONTACT** CS Cearlock	**TELEPHONE NO.** 372-9638	**PROJECT COORDINATOR** TRENT, SJ
SAMPLING LOCATION 216-U-3; 22.5ft-25ft	**PROJECT DESIGNATION** 200-MW-1 Characterization Sampling and Analysis - Soil H-2-3923 (7209)	**SAF NO.** F04-015	**PRICE CODE** 8N; **AIR QUALITY** ☐; **DATA TURNAROUND** 45 Days / 45 Days
ICE CHEST NO. GRP-03-003	**FIELD LOGBOOK NO.** HNF-N-386 1	**COA** 119144ES10	**METHOD OF SHIPMENT** Federal Express
SHIPPED TO Eberline Services	**OFFSITE PROPERTY NO.** See PTR 14601		**BILL OF LADING/AIR BILL NO.** See PTR 14601

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: Radioactive Tie To: ~~B19993~~ B19975 12/21/04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION	TYPE OF CONTAINER	NO. OF CONTAINER(S) / VOLUME	SAMPLE ANALYSIS								
				Cool 4C	aG	1 / 250mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Cool 4C	aG	1 / 250mL	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Cool 4C	aGs*	3 / 40mL	SEE ITEM (3) IN SPECIAL INSTRUCTIONS
				Cool 4C	aGs*	3 / 40mL	Alcohols, Glycols, - Ketones - 8015 (1-Butanol)	Cool 4C	aG	1 / 120mL	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	Cool 4C	aG	1 / 120mL	PCBs - 8082;
				None	P	1 / 500mL	SEE ITEM (5) IN SPECIAL INSTRUCTIONS								
B19PT5	SOIL	12-13-04	6750												

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. Pfister/Pfister	12-13-04 1415	189-926 FRIG*	12-13-04 1415
189-926 FRIG*	12/21/04 0830	M.L. Ballew M.L. Ballew	12/21/04 0830
M.L. Ballew M.L. Ballew	12/21/04 0830	FED EX	
FED EX	12/23/04 12:00	[illegible]	12/23/04 12:00

SPECIAL INSTRUCTIONS

** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis.
(1)IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Total Cyanide - 9010; pH (Soil) - 9045;
(2)ICP Metals - 6010A (Supertrace) {Cadmium, Chromium, Lead, Silver} ICP Metals - 6010A (Supertrace Add-On) {Copper} Mercury - 7471 - (CV);
(3)VOA - 8260A (TCL); VOA - 8260A (Add-On) {cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene}
(4)Semi-VOA -- 8270A (Add-On) {Tributyl phosphate} TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range}
(5)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Total Uranium;

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

7209

RICHMOND, CA LABORATORY

EBERLINE SERVICES

SAMPLE RECEIPT CHECKLIST

Client: Fluor Hanford City: Richland State: WA

Date/Time received/ 12/23/04/12:00 CoC No. F04-015-070, 076, 118, 120

Container I.D. No. GRP 03-003 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 4 Sample Matrix Soil
7. Number of containers per sample: ______ (Or see CoC —)
8. Samples are in correct container Yes [✓] No [ ]
9. Paperwork agrees with samples? Yes [✓] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH ______ Preservative ______
13. Describe any anomalies: ______
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date ______
15. Inspected by [signature] Date: 12/23/04 Time: 12:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B19972	—	(Can/Spa Lin)		— for Shaw			
B19966	for chem						
B19962							
B19PT5							

Ion Chamber Ser. No. ______ Calibration date ______

Alpha Meter Ser. No. ______ Calibration date ______

Beta/Gamma Meter Ser. No. ______ Calibration date ______

Form SCP-01.2, 01-16-04 *"over 50 years of quality nuclear services"*

CHEMICAL RESULTS
200-MW-1 Characterization Sampling and Analysis - Soil

SDG NUMBER: H2905-A

SAF NUMBER: F04-015

DISTRIBUTE TO: Mary Todd
Greg Thomas

SAVE AS: H2905 C

IDMS DOCUMENT TYPE: PARTIAL

GENERAL DESCRIPTION: F04-015, CHEM

LOCATION: BOREHOLE C4559, 216-U-3

14 LIONVILLE LABORATORY INC.

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0412L484
SDG #	H2905
SAF #	F03-025
Date Received	12-18-04
# Samples	7
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

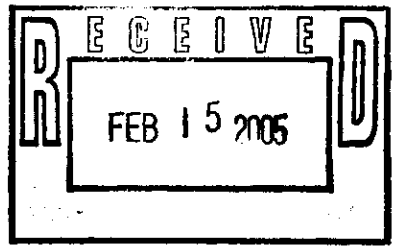
Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F04-015 H2905

DATE RECEIVED: 12/18/04 LVL LOT # :0412L484

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19PT5	004	S	04LVG398	12/13/04	N/A	12/22/04
B19PT5	004 MS	S	04LVG398	12/13/04	N/A	12/22/04
B19PT5	004 MSD	S	04LVG398	12/13/04	N/A	12/22/04
LAB QC:						
VBLKIO	MB1	S	04LVG398	N/A	N/A	12/22/04
VBLKIO	MB1 BS	S	04LVG398	N/A	N/A	12/22/04



LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD F04-015
LVL#: 0412L484
SDG/SAF#: H2905/F04-015

W.O.#: 11343-606-001-9999-00
Date Received: 12-18-2004

GC/MS VOLATILE

One (1) soil sample was collected on 12-13-2004.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 12-22-2004.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.

2. The sample was analyzed within required holding time.

3. Non-target compounds were detected in the sample.

4. All surrogate recoveries were within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.

8. Internal standard area and retention time criteria were met.

9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

2/1/05

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

som\group\data\voa\tnu-hanford\0411-484.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

LvLI
LIONVILLE LABORATORY INC.

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0412L505
SDG #	H2~~923~~-05 Dayes 2/23/05
SAF #	F04-015
Date Received	12-23-04
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

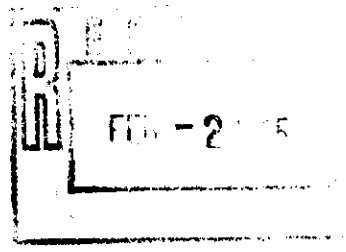
RECEIVED
FEB - 2 2005

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F04-015 H2923

DATE RECEIVED: 12/23/04 LVL LOT # :0412L505

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19966						
% SOLIDS	001	S	04L%S206	12/20/04	12/27/04	12/28/04
% SOLIDS	001 REP	S	04L%S206	12/20/04	12/27/04	12/28/04
CHROMIUM VI	001	S	04LVI048	12/20/04	12/28/04	12/28/04
CHROMIUM VI	001 REP	S	04LVI048	12/20/04	12/28/04	12/28/04
CHROMIUM VI	001 MS	S	04LVI048	12/20/04	12/28/04	12/28/04
CHROMIUM VI	001 MSD	S	04LVI048	12/20/04	12/28/04	12/28/04
NITRATE NITRITE	001	S	05LN3B04	12/20/04	01/19/05	01/19/05
NITRATE NITRITE	001 REP	S	05LN3B04	12/20/04	01/19/05	01/19/05
NITRATE NITRITE	001 MS	S	05LN3B04	12/20/04	01/19/05	01/19/05
OIL & GREASE BY GRAV	001	S	04LOG047	12/20/04	12/30/04	12/31/04
OIL AND GREASE BY GR	001 REP	S	04LOG047	12/20/04	12/30/04	12/31/04
OIL AND GREASE BY GR	001 MS	S	04LOG047	12/20/04	12/30/04	12/31/04
LAB QC:						
CHROMIUM VI	MB1	S	04LVI048	N/A	12/28/04	12/28/04
CHROMIUM VI	MB1 BS	S	04LVI048	N/A	12/28/04	12/28/04
CHROMIUM VI	MB1 BSD	S	04LVI048	N/A	12/28/04	12/28/04
NITRATE NITRITE	MB1	S	05LN3B04	N/A	01/19/05	01/19/05
NITRATE NITRITE	MB1 BS	S	05LN3B04	N/A	01/19/05	01/19/05
OIL & GREASE BY GRAV	MB1	S	04LOG047	N/A	12/30/04	12/31/04
OIL AND GREASE BY GR	MB1 BS	S	04LOG047	N/A	12/30/04	12/31/04



LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F04-015 H2923
LVL#: 0412L505

W.O.#: 11343-606-001-9999-00
Date Received: 12-23-04

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite and Oil and Grease were within the 75-125% control limits.

8. The replicate analyses Percent Solids and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit however replicate analyses for Chromium VI and Nitrate Nitrite were outside the control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/28/05
Date

njp\12-505

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

02

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A (mod.)	✓ EPA 413.1 (mod.
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	
Other: Nitrate Nitrite	**Method:**	EPA 353.2 (mod.)	
Other:	**Method**		

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/24/05

CLIENT: TNUHANFORD F04-015 H2923 LVL LOT #: 0412L505

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B19966	% Solids	91.2	%	0.01	1.0
		Chromium VI	0.24	MG/KG	0.22	1.0
		Nitrate Nitrite	0.94	MG/KG	0.22	1.0
		Oil & Grease Gravimetri	731 u	MG/KG	731	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/24/05

CLIENT: TNUHANFORD F04-015 H2923 LVL LOT #: 0412L505
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LVI048-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0
BLANK10	05LN3B04-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	04LOG047-MB1	Oil & Grease Gravimetri	667 u	MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/24/05

CLIENT: TNUHANFORD F04-015 H2923 LVL LOT #: 0412L505
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B19966	Soluble Chromium VI	4.7	0.24	4.4	101.7	1.0
		Insoluble Chromium VI	1400	0.24	1190	118.0	100
		Nitrate Nitrite	6.4	0.94	5.5	99.4	1.0
		Oil & Grease Gravimetr	8530	731 u	8950	95.4	1.0
BLANK10	04LVI048-MB1	Soluble Chromium VI	4.1	0.20u	4.0	101.4	1.0
		Insoluble Chromium VI	1380	0.20u	1180	117.1	100
BLANK10	05LN3B04-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.8	1.0
BLANK10	04LOG047-MB1	Oil & Grease Gravimetr	8300	667 u	8160	101.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/24/05

CLIENT: TNUHANFORD F04-015 H2923 LVL LOT #: 0412L505

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B19966	% Solids	91.2	91.9	0.73	1.0
		Chromium VI	0.24	0.22u	143.0	1.0
		Nitrate Nitrite	0.94	0.46	68.6	1.0
		Oil & Grease Gravimetri	731 u	731 u	NC	1.0

Livermore Laboratory Use Only

04121505

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVL 69

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

4 See SRC

Refrigerator # 4

#/Type Container

Volume

Preservatives

ANALYSES REQUESTED →

ORGANIC: VOA | BNA | Pest/PCB | Herb

INORG: Metal | CN

Date Rec'd 12/23/04 Date Due 1/22/05

Livermore Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	IN3N2	IOOOR	ICR6
001									

Special Instructions:

DATE/REVISIONS:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Relinquished by	Received by	Date	Time
Ed Ed	[signature]	12/24/04	1020

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"	ORIGINAL REWRITTEN		

COLLECTOR	COMPANY CONTACT / TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Tyra/Wiberg	CS Cearlock / 372-9638	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.
216-U-3; 127FT-129.5FT	200-MW-1 Characterization Sampling and Analysis - Soil	F04-015

ICE CHEST NO.	FIELD LOGBOOK NO.	COA	METHOD OF SHIPMENT
SANS-500	HNF-N-386 1	119144ES10	Federal Express

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
~~Sherline Services~~ MDB 12-21-04 Recra	See PTR MCD2	See PTR MCD2

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
Radioactive Tie To: ~~B19956~~ MDB 12/21/04 B19955

PRESERVATION	Cool 4C	None	
TYPE OF CONTAINER	aG	aG	
NO. OF CONTAINER(S)	1	1	
VOLUME	120mL	60mL	
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;	

MDB 12-21-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B19966	SOIL	12/20/04	0740	X	/

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
[signature] / David Tyra	12/20/04 0910	MO-020 Frig #1	12/20/04 0910
MO-020 Frig #1	12/21/04 0835	M.G. Baldwin / M.G. Baldwin	12/21/04 0835
M.G. Baldwin / M.G. Baldwin	12/21/04 [illegible]	FedEx	
FedEx	12-23-04 1020	[signature]	12-23-04 1020

SPECIAL INSTRUCTIONS
(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNC HANFORD **Date:** 12-23-04

Purchase Order / Project# / SAF# / SOW# / Release #: F04-015

LvLI Batch #: 0412L505 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier Fed Ex	Airbill# 7914 2525 4585	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes ☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes ☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes ☐ No		
5.	Samples received cooled or ambient?	Temp 4.5 °C	Cooler # SAWS-500	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes ☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes ☐ No		
8.	Sample containers are intact?	☑ Yes ☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes ☐ No		
10.	All sample label information matches coc?	☑ Yes ☐ No		
11.	Samples properly preserved?	☑ Yes ☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes ☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes ☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☑ Yes ☐ No	☐ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes ☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes ☐ No	☑ No Discrepancies	

SR-002-B